WHAT IS CLAIMED IS:

1. An apparatus for temperature compensation of a region of an optical fiber, wherein the apparatus comprises
   (a) a first member having a positive coefficient of thermal expansion, wherein at least a portion of the first member lies in a first plane;
   (b) a second member on the first member, wherein the second member has a coefficient of thermal expansion lower than the coefficient of thermal expansion of the first member, and
   (c) a mount for the optical fiber, wherein the mount is substantially normal to the first plane and extends a predetermined distance from the first plane.

2. The apparatus of claim 1, wherein the mount comprises a first tower and a second tower.

3. The apparatus of claim 2, wherein the first and second towers comprise a mounting surface for the optical fiber, wherein the mounting surfaces of the first and second towers are substantially planar.

4. The apparatus of claim 3, wherein the mounting surfaces of the first and second towers are substantially the same distance from the first plane.

5. The apparatus of claim 3, wherein the mounting surface of at least one of the first and second towers comprises a latch to retain the optical fiber.

6. The apparatus of claim 3, wherein the mounting surface of at least one of the first and second towers is metallized.

7. The apparatus of claim 3, wherein at least one of the first and second towers comprises a notch to retain the optical fiber.

8. The apparatus of claim 7, wherein the notch is elongated and extends longitudinally along the mounting tower and in a direction substantially normal to the first plane.

9. The apparatus of claim 3, wherein the coefficient of thermal expansion of the first member, the coefficient of thermal expansion of the second member, and the

predetermined distance of the mounting surfaces above the first plane are selected to apply a compressive axial strain to the region with increasing temperature and a tensile axial strain to the region with decreasing temperature.

10. The apparatus of claim 2, wherein the first member comprises a first metal and the second member comprises a second metal different from the first metal.

11. The apparatus of claim 10, wherein at least one of the towers comprises the second metal.

12. A method for temperature compensating a region of an optical fiber with a diffraction grating, comprising:

(a) providing a temperature compensation apparatus comprising

(1) a first member having a positive coefficient of thermal expansion, wherein at least a portion of the first member lies in a first plane;

(2) a second member on the first member, wherein the second member has a coefficient of thermal expansion lower than the coefficient of thermal expansion of the first member; and

(3) a mount for the optical fiber, wherein the mount comprises a first tower and a second tower, and wherein the towers are substantially normal to the first plane and extend a predetermined distance from the first plane; and

(b) attaching the optical fiber to the first and second towers such that the region lies therebetween.

13. The method of claim 12, wherein in step (b) the optical fiber is attached with an adhesive to at least one of the first and second towers.

14. The method of claim 12, wherein step (b) comprises metallizing the optical fiber and soldering the optical fiber to at least one of the first and second towers.

15. The method of claim 12, wherein at least one of the first and second towers comprises a latch, and the optical fiber is attached to the tower with the latch.

16. The method of claim12, wherein step (b) is performed with the optical fiber under tension.

17. A temperature compensating package for a fiber optic Bragg grating, comprising an enclosure with a first end and a second end, an optical fiber mount on a first end of the enclosure, and a temperature compensating washer on the second end of the enclosure, wherein the washer comprises a disk with an aperture, wherein the disk comprises a first layer adjacent the second end of the enclosure and a second layer on the first layer, wherein the first layer has a positive coefficient of thermal expansion and the second layer with a coefficient of thermal expansion lower than the coefficient of thermal expansion of the first layer.

18. A temperature compensating optical device, comprising:

(a) a first member having a positive coefficient of thermal expansion, wherein at least a portion of the first member lies in a first plane;

(b) a second member on the first member, wherein the second member has a coefficient of thermal expansion lower than the coefficient of thermal expansion of the first member;

(c) a mount for the optical fiber, wherein the mount comprises a first tower and a second tower, wherein the first and second towers are substantially normal to the first plane and extend a predetermined distance from the first plane; and

(d) an optical fiber attached to the first and second towers, wherein a region between the first and second towers comprises a diffraction grating.

19. A temperature compensating optical device, comprising:

(a) an enclosure with a first end and a second end,

(b) an optical fiber mount on a first end of the enclosure,

(c) a temperature compensating washer on the second end of the disclosure, wherein the washer comprises a disk with an aperture, wherein the disk comprises a first layer adjacent the second end of the enclosure and a second layer on the first layer, wherein the first layer has a positive coefficient of thermal expansion and the second layer with a coefficient of thermal expansion lower than the coefficient of thermal expansion of the first layer; and

(d) an optical fiber attached to the fiber mount and the washer, wherein a region of the optical fiber is within the enclosure, and wherein the region comprises a diffraction grating.